

Docket No. 200308820-1

Remarks

This Amendment is responsive to the **June 20, 2006 Office Action**. Reexamination and reconsideration of **claims 1-17** is respectfully requested.

Summary of The Office Action

Claims 17-19 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. **Claims 18 and 19** have been cancelled. Arguments concerning the Interim Guidelines and the determination that carrier waves and/or transmission media are non-statutory are provided for claim 17.

Claims 1-2, 6, 10-11, 15, and 18-19 were rejected under 35 U.S.C. §102(e) as being anticipated by Sano, et. al. (US 6,941,406 B2)(Sano).

Claims 1-2, 10-11, and 18-19 were rejected under 35 U.S.C. §102(e) as being anticipated by Quach, et al. (US 6,711,653 B1)(Quach).

Claims 3-5, 7-9, 12-14, and 16 were objected to as being dependent upon a rejected base claim, but were identified as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. **Claims 3, 7, 12, and 16** have been rewritten as suggested, which also cures the objections to **claims 4-5, 8-9, and 13-14**.

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35 U.S.C. §101

Claims 17-19 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Claims 18 and 19 have been cancelled. The Office Action recites that “a computer-readable medium, which as described in the specification at page 6 might be a transmission media such as electromagnetic radiation, and thus according to current practice, is non-statutory subject matter”. While this type of 35 U.S.C. §101 rejection may have been valid before *In re Beauregard*, 53 F. 2d 1583, 35 USPQ 2d 1382 (Fed. Cir. 1995), and before *in re Lowry*, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994) it is clearly out of place and improper now. The teachings of these cases and the PTO response to the teachings were initially provided to examiners and practitioners alike in the 1996 guidelines for examining computer related inventions. More recently, the “Interim Guidelines” were provided by the PTO in a misplaced attempt to overrule the Federal Circuit. As has been proven again and again, most recently in *Ex parte Lundgren*, Appeal No. 2003-2088 (BPAI 2005), the PTO must follow the law, and not create the law.

The guidelines as recited in MPEP §2106 provide guidance for how to examine computer-readable medium claims. MPEP §2106 distinguishes proper 35 U.S.C. §101 rejections for claims to forms of energy from improper 35 U.S.C. §101 rejections for claims to signals functioning as a computer-readable medium. MPEP §2106 reads, in pertinent parts:

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are non-statutory natural phenomena. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112-14 (1853). However, a signal claim directed to a practical application of electromagnetic energy is **statutory regardless of its transitory nature**. See *O'Reilly*, 56 U.S. at 114-19; *In re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980). ... In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is **thus statutory**. (emphases added)

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The 1996 guidelines were supplemented with the 1996 PTO training materials related to examining computer related inventions. These training materials discuss, with approval, this claim in US patent 5,568,202 (Koo).

An electronic reference signal in a system for minimizing the effects of ghosts occurring during the transmission and reception of a television signal over a communications path, wherein said reference signal is embodied in a processor readable memory, is non-cyclic, has a substantially flat frequency response within the bandwidth of said communications path and has a plurality of substantially uniform amplitude peaks over a time interval, and wherein a replica of said reference signal is transmitted as part of said television signal and is utilized by a decoder to derive coefficients which are used with at least one filter to remove said ghosts.

Thus, since at least 1996, this type of claim has been regarded favorably by the PTO and has been deemed to be statutory subject matter. For several years the PTO followed the law as established by the Federal Circuit in *Beauregard* and *Lowry*. *Beauregard* and *Lowry* established that data structures and computer programs stored on floppy disks were statutory subject matter. The rationale behind the decisions was that a provider of infringing software should be liable as a direct infringer rather than as a contributory infringer. If the data structure or computer program on the floppy disk was not statutory, then only the user of the software would be a direct infringer. The user could end up as an unwitting infringer while the knowingly infringing provider goes free. Thus, patent owners would be forced to sue unwitting infringers for direct infringement to be able to get to the contributory infringer. If the disk were not an infringing article of manufacture and the disk was provided from outside the United States then the provider might not have even been liable for contributory infringement since they would not have made, used, sold, or imported an infringing article. This is inequitable and thus the Federal Circuit acted, making programs and data structures embodied in computer-readable mediums statutory subject matter.

However, the PTO has recently decided to go against the Federal Circuit by creating its own law in the Interim Guidelines. The flaws in the Interim Guidelines are discussed below. Since *Beauregard* and *Lowry*, propagated signals have largely replaced floppy disks for software distribution. Thus, the Examination guidelines analogize with approval a propagated signal and a *Beauregard* claim (see 1996 guidelines, claim 13) (See also, *Koo*).

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The signal claim is directed to a manufactured transient phenomenon, like an electrical, optical, or acoustic signal that is more than just a perturbation. The manufactured transient phenomenon allows the transmission of computer executable instructions in the same way that the floppy disk of Beauregard and Lowry allow the transmission of computer executable instructions. Therefore, the claims are statutory subject matter, as determined by case law and PTO guidelines, and the 35 U.S.C. §101 rejection should be removed.

The Office Action appears to rely on the Interim Guidelines as authority for the position that a carrier wave is not statutory subject matter because it is not an article of manufacture. Contrary to the Office Action assertion, the Interim Guidelines as controlled by Federal Circuit case law reveal that functional matter embodied on floppy disks, memories and carrier waves is statutory subject matter. Therefore this rejection is baseless and should be withdrawn.

MPEP §2106 (IV)(B)(1)(a) reads:

A claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is **thus statutory**. (emphasis added)

In this application the rejected claims concern a computer readable medium.

MPEP §2106 (IV)(B)(1)(c) reads:

A signal claim directed to a practical application of electromagnetic energy **is statutory regardless of its transitory nature**. See O'Reilly, 56 U.S. at 114-19; In re Breslow, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980). (emphasis added)

In this application the rejected claims concern transmitting processor executable instructions, which is a practical application of electromagnetic energy. Thus, following MPEP §2106(IV)(B)(1), the claims are statutory and this rejection should be withdrawn. Nothing in the Interim Guidelines supercedes this settled case law.

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The Interim Guidelines specifically address signal claims. Annex IV, Computer-Related Nonstatutory Subject Matter includes section (c), titled Electro-Magnetic Signals. This section reads, in pertinent parts:

It does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101. ... A claimed signal has no physical structure, **does not itself perform any useful, concrete and tangible result** and, thus, does not fit within the definition of a machine. (emphasis added).

This reasoning is flawed. The claimed signals do perform a useful, concrete (reproducible), and tangible (detectable, physical) result. The claimed signals carry computer executable instructions from one point (e.g., local computer) to another point (e.g., remote computer) in a repeatable, detectable, and useful manner. When received, the claimed signals transform the receiving machine into a newly programmed machine. Thus, all prongs of the "practical utility" test are met, making the claimed signals statutory subject matter.

This section of The Interim Guidelines recognizes that the issue is not closed:

[F]rom a technological standpoint, a signal encoded with functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material, in that they both create a functional interrelationship with a computer. In other words, a computer is able to execute the encoded functions, regardless of whether the format is a disk or a signal. (emphasis added).

Thus, even the Interim Guidelines recognize that these new §101 rejections are questionable. Since the rejections are questionable, the Examiner is invited to apply the "practical result" test identified in the Interim Guidelines to the claims in question. Since a practical result is unquestioned, the Examiner is encouraged to remove the rejections.

The Interim Guidelines conclude by stating:

These interim guidelines **propose** that such signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101. **Public comment is**

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sought for further evaluation of this question. (emphasis added)

Even though the guidelines "propose" that the signal claims are ineligible for patent protection, **they do not require** that these claims be rejected. Indeed, the Interim Guidelines seek public comment, indicating that this is an open issue. The Interim Guidelines also caution the Examiner not to strictly apply the "article of manufacture" test. For example, Section IV, subsection A, instructs the Examiner that:

Congress chose the expansive language of 35 U.S.C. Sec. 101 so as to include "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09, 206 USPQ 193, 197 (1980). ... [Thus], the question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to ... but rather on the essential characteristics of the subject matter, in particular, its practical utility.

In this application, the practical utility, (e.g., transmitting computer executable instructions from place to place) is undisputed. What is disputed, is the propriety of the §101 rejections. Thus, Applicant respectfully requests that the §101 rejections be withdrawn so that meaningful prosecution on the merits can proceed.

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The Claims Patentably Distinguish Over the References of Record

35 U.S.C. §102

For a 35 U.S.C. §102 reference to anticipate a claim, the reference must teach every element of the claim. Section 2133 of the MPEP recites:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Claims 1-2, 6, 10-11, 15, and 18-19 were rejected under 35 U.S.C. §102(e) as being anticipated by Sano. This section addresses those rejections on an individual basis.

Independent Claim 1

Claim 1 is directed to a system that interacts with a virtual bus interface (VBI). The VBI can produce bus-type transactions from point-to-point (P2P) transactions. Claim 1 recites a detecting logic and a coding logic. The detection logic detects a cache coherence protocol mode associated with a system that provided the P2P-type transaction. The coding logic controls how a cache coherence transaction received from the originating system is processed by the VBI. The control is based on the cache coherence protocol mode detected by the detection logic.

The Office Action asserts that Sano element 32 discloses a VBI that produces a bus-type transaction from a P2P-type transaction. The Office Action relies on Fig. 1, col. 1, lines 50-56, and col. 2, lines 16-54 to support the assertion. This passage describes element 32, a memory bridge that sits between an interconnect 22 and a switch 18. Col. 3, lines 25-33 describe that a memory bridge:

includes circuitry designed to handle internode coherency functions within a node. Thus, the memory bridge 32 may be a source/destination of the coherency commands. In response to at least some received coherency commands, the memory bridge 32 may generate corresponding transactions on the interconnect 22. In response to at least some transactions on the interconnect 22 generated by other agents, the memory bridge 32 may generate coherency commands.

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Thus, for the Office Action position to withstand scrutiny, the transactions generated on interconnect 22 must include bus-type transactions generated by bridge 32. However, the switch 18 "separates coherent traffic and packet traffic from the interface circuits 20A-20C, routing the coherent traffic to the memory bridge 32 and routing the packet traffic to the DMA circuit 16." Col. 3, lines 42-45. Thus, it appears that bridge 32 only processes coherent traffic, and not bus-type traffic.

The cited passage (col. 1, lines 50-55) supports the position that the bridge 32 only deals with coherency transactions and that packets are handled by DMA circuit 16. Specifically, the passage recites that the "switch is configured to route the coherency commands from the interface circuits to the memory bridge [32] and packets from the interface circuits to the DMA circuit [16]." It appears that two separate elements are present, one specifically tasked with handling coherence transactions, the other specifically tasked with handling DMA packets. Therefore, the reference does not disclose a system that interacts with a VBI that can produce bus-type transaction from P2P-type transaction, since neither bridge 32 nor DMA circuit 16 do any conversions, they simply handle their own type of transactions.

The Office Action also asserts that Sano teaches the detection logic that detects the cache coherency protocol. The Office Action relies on element 32, col. 4, lines 33-54 and 61-67 to support the assertion. Col. 4 describes interfaces that can transmit and receive coherency commands. While receiving and transmitting commands is described, none of the commands or processing thereof appear to concern detecting coherence. Lines 61-67 describe routing based on command type, not based on coherency type. Therefore, the reference does not teach the detecting logic.

The Office Action also asserts that Sano teaches a coding logic that controls how a cache coherence transaction is processed by the VBI based on the protocol detected by the detection logic. The Office Action relies on element 32, col. 27, lines 15-18, 27-33, and 54-57, and col. 28, lines 23-27 and 51-53, and col. 29, lines 4-11 and 26-29. These passages describe different processing of different coherence commands, but the different processing is based on command type, not protocol type. The processing is not based on a protocol detected by a detection logic because no detection has occurred. Thus, while the reference

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teaches different processing for different commands, it does not teach controlling processing based on protocol type.

Since claim 1 recites features not taught or suggested by the reference, claim 1 patentably distinguishes over the reference and is in condition for allowance. Accordingly, dependent claims 2 and 6 also patentably distinguish over the reference and are in condition for allowance.

Claim 2

Claim 2 depends from claim 1. Claim 1 has been shown to be not anticipated. Thus, this claim is similarly not anticipated. Additionally, this claim recites a state machine to track transaction types. While the reference describes responding to various command types, this responding seems to be a single step process that does not require a state machine. Thus, no state machine is called out in the reference. For this additional reason this claim is not anticipated and is in condition for allowance.

Independent Claim 10

Claim 10 is directed to a VBI system that produces a bus-type transaction from a P2P-type transaction. As described above in connection with claim 1, the reference describes processing different types of transactions but not creating bus-type transaction from P2P-type transactions. While system 10 may process more than one type of transaction, it has separate elements for processing the different types and maintains the different types as different types without converting them.

Since claim 10 recites features not taught or suggested by the reference, this claim patentably distinguishes over the reference. Accordingly, dependent claim 11 also patentably distinguish over the reference and is in condition for allowance.

Claim 11

Claim 11 depends from claim 10, which has been shown to be not anticipated. Thus, this claim is similarly not anticipated. Additionally, this claim recites a state machine to track transaction types. While the reference describes responding to various command types,

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this responding seems to be a single step process that does not require a state machine. Thus, no state machine is called out in the reference. For this additional reason this claim is not anticipated and is in condition for allowance.

Independent Claim 15

This claim is directed to selectively processing a packet associated with a P2P-type transaction into a bus-type transaction. The selectiveness may be based on a determined cache coherence protocol. The reference discloses neither detecting a cache coherence protocol nor basing selective processing of a transaction from P2P-type to bus-type based on the detected cache coherence protocol. While the reference describes methods for processing different types of transactions, the methods appear to be independent, and to not include converting from P2P-type to bus-type. Since this claim recites features not taught or suggested by the reference, this claim patentably distinguishes over the reference and is in condition for allowance.

Claims 1-2, 10-11, and 18-19 were also rejected under 35 U.S.C. §102(e) as being anticipated by Quach. Claims 18 and 19 have been cancelled. This section addresses the rejections of claims 1-2, and 10-11 on an individual basis.

Independent Claim 1

Claim 1 is directed to a system that interacts with a virtual bus interface (VBI). The VBI can produce bus-type transactions from point-to-point (P2P) transactions. Claim 1 recites a detecting logic and a coding logic. The detection logic detects a cache coherence protocol mode associated with a system that provided the P2P-type transaction. The coding logic controls how a cache coherence transaction received from the originating system is processed by the VBI. The control is based on the cache coherence protocol mode detected by the detection logic.

Quach describes itself as a "computer system that is capable of operating in a first or second cache coherency mode." (Abstract). However, the first and second cache coherency

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modes appear to be "on" or "off", not, for example, mode A and mode B. The on state exists when MAA (memory attribute aliasing) is supported, the off state exists when MAA is not supported. MAA occurs when a memory page is accessed with inconsistent memory attributes.

A mode status bit is associated with identifying whether MAA is supported. The Office Action asserts that performing different processing based on the status of mode status bit 128 teaches the conditional processing based on detected cache coherency protocol. Mode status bit 128 is set to a first value when compute system 100 is booted in a first operating environment that supports MAA. Mode status bit 128 is set to a second value when compute system 100 is booted in a second operating environment that does not support MAA.

For the Office Action reasoning to hold, the presence or absence of MAA must equate to different cache coherency protocols. However, the reasoning does not hold since detecting the presence or absence of a single protocol does not teach identifying between different types of protocols.

Since claim 1 recites features not taught or suggested by the reference, claim 1 patentably distinguishes over the reference and is in condition for allowance. Accordingly, dependent claim 2 also patentably distinguishes over the reference and is in condition for allowance.

Claim 2

Claim 2 depends from claim 1. Claim 1 has been shown to be not anticipated. Thus, this claim is similarly not anticipated. Additionally, this claim recites a state machine to track transaction types. While the reference describes processing transactions, it does not explicitly describe using a state machine to do so. For this additional reason this claim is not anticipated and is in condition for allowance.

Independent Claim 10

Claim 10 is directed to a VBI system that produces a bus-type transaction from a P2P-type transaction. As described above in connection with claim 1, the reference describes

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processing transactions differently based on the presence or absence of MAA. Since detecting the presence or absence of a single cache coherency protocol does not equal distinguishing between protocols, claim 10 is not anticipated. Since claim 10 recites features not taught or suggested by the reference, this claim patentably distinguishes over the reference and is in condition for allowance. Accordingly, dependent claim 11 also patentably distinguish over the reference and is in condition for allowance.

Claim 11

Claim 11 depends from claim 10, which has been shown to be not anticipated. Thus, this claim is similarly not anticipated. Additionally, this claim recites a state machine to track transaction types. While the reference describes processing transactions, it does not explicitly describe using a state machine to do so. For this additional reason this claim is not anticipated and is in condition for allowance.

References Cited But Not Applied

The references cited but not applied have been considered and do not teach or suggest the recited features of the respective claims, individually or in combination with each other. Therefore, all claims are in condition for allowance.

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Conclusion

For the reasons set forth above, claims 1-17 patentably distinguish over the references and are allowable. An early allowance of all claims is earnestly solicited.

Respectfully submitted,



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